

**What is claimed is:**

1        1. A modular refrigeration system, comprising:  
2                a refrigeration device having a space configured for storage of products  
3                therein;  
4                a cooling system providing a coolant configured to cool the space;  
5                at least one modular cooling element configured for placement at any  
6                one of a plurality of locations within the space and configured to receive the coolant  
7                so that a temperature distribution profile of the products within the space can be  
8                customized.

1        2. The modular refrigeration system of Claim 1 wherein the refrigeration  
2                device is a temperature controlled case.

1        3. The modular refrigeration system of Claim 1 wherein the coolant is a  
2                liquid coolant.

1        4. The modular refrigeration system of Claim 1 wherein the coolant is a  
2                direct expansion refrigerant.

1        5. The modular refrigeration system of Claim 1 wherein the refrigeration  
2                device comprises a main heat exchanger and the modular cooling element is  
3                configured to provide supplemental cooling at a predetermined location within the  
4                space.

1        6. The modular refrigeration system of Claim 1 further comprising a piping  
2                system interfacing with the cooling system and the modular cooling element and  
3                configured to circulate the coolant through the modular cooling element.

1        7. The modular refrigeration system of Claim 1 wherein the modular  
2                cooling element is portable and configured for interchangeable installation at one of  
3                the plurality of locations within the space.

1        8. The modular refrigeration system of Claim 1 wherein the modular  
2                cooling element is coupled to a shelf.

1        9. The modular refrigeration system of Claim 1 wherein the modular  
2 cooling element is coupled to an end panel.

1        10. The modular refrigeration system of Claim 1 further comprising a  
2 control system configured to regulate a flow of the coolant to the modular cooling  
3 element.

1        11. The modular refrigeration system of Claim 1 wherein the modular  
2 cooling element is positioned so that the temperature variation among the products  
3 is minimized.

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1        12. A system for customizing a temperature distribution profile within a  
2 space of a refrigeration device, comprising:

3                a cooling system having a first heat exchanger in a substantially fixed  
4 location and a coolant configured to cool the space;

5                a second heat exchanger configured for selective placement at a  
6 desired location within the refrigeration device;

7                a piping system configured to interface with the cooling system and the  
8 second heat exchanger to provide a supply of coolant to the second heat exchanger;  
9 and

10                a control system configured to regulate a flow of coolant through the  
11 second heat exchanger.

1        13. The system of Claim 12 wherein the refrigeration device is a  
2 temperature controlled case for storage and display of food products.

1        14. The system of Claim 13 wherein the temperature controlled case is an  
2 existing temperature controlled case and the second heat exchanger is configured  
3 for placement as a retrofit application.

1        15. The system of Claim 13 wherein the temperature controlled case is a  
2 new temperature controlled case and the second heat exchanger is configured for  
3 placement during construction of the new temperature controlled case.

1        16. The system of Claim 12 wherein the first heat exchanger is a main heat  
2        exchanger and the second heat exchanger is a modular cooling element.

1        17. The system of Claim 16 wherein the modular cooling element is  
2        removably coupled to a surface within the space.

1        18. The system of Claim 16 wherein the modular cooling element is  
2        configured for placement at a predetermined location within the space to provide a  
3        source of supplemental cooling.

1        19. The system of Claim 18 wherein the predetermined location is a shelf  
2        unit.

1        20. The system of Claim 18 wherein the predetermined location is an end  
2        panel.

1        21. The system of Claim 16 wherein the piping system includes at least  
2        one flow control device configured to regulate a flow of coolant to the modular  
3        cooling element.

1        22. The system of Claim 16 wherein the modular cooling element is a fin-  
2        coil type heat exchanger.

1        23. The system of Claim 12 wherein the piping system further comprises at  
2        least one quick disconnect device configured to interconnect the piping system and  
3        the second heat exchanger.

1        24. A temperature controlled case having a modular cooling system,  
2 comprising:

3                a cooling system providing a coolant and having a main cooling  
4 element in a substantially fixed location and configured to receive the coolant and  
5 provide cooling to a space within the temperature controlled case;

6                at least one supplemental cooling element configured to interface with  
7 the cooling system and to receive a supply of the coolant;

8                wherein the supplemental cooling element is configured to be  
9 selectively mounted at any one of a plurality of locations within the space so that a  
10 variation of a temperature range within the space can be substantially minimized.

1        25. The temperature controlled case of Claim 24 wherein the supplemental  
2 cooling element is configured to mount on a shelf unit.

1        26. The temperature controlled case of Claim 24 wherein the supplemental  
2 cooling element is configured to mount on a panel member.

1        27. The temperature controlled case of Claim 24 wherein the coolant is  
2 one of a liquid secondary coolant and a direct expansion refrigerant.

1        28. The temperature controlled case of Claim 24 wherein the supplemental  
2 cooling element is configured for interchangeable installation at a predetermined  
3 location.

1        29. The temperature controlled case of Claim 24 wherein the supplemental  
2 cooling element is configured to provide a localized source of cooling within the  
3 space.

1        30. The temperature controlled case of Claim 24 wherein the supplemental  
2 cooling element is configured as a substantially flat panel.

1        31. The temperature controlled case of Claim 24 wherein the supplemental  
2 cooling element has a cooling capacity sufficient to minimize a temperature variation  
3 within the space.

1       32. The temperature controlled case of Claim 24 wherein the supplemental  
2 cooling element is reconfigurable to accommodate changes to the temperature  
3 controlled case.

1       33. The temperature controlled case of Claim 24 further comprising a  
2 supplemental warming element configured to receive a warmed supply of the  
3 coolant.

4       34. A method of customizing a temperature distribution profile within a  
5 refrigeration device having a cooling system, comprising:

6               determining a temperature distribution profile within the refrigeration  
7 device provided by the cooling system;

8               identifying at least one location within the refrigeration device having a  
9 temperature above a desired temperature range;

10              providing a modular cooling element configured for installation at the  
11 location; and

12              interconnecting the modular cooling element with the cooling system.

1       35. The method of Claim 34 wherein the step of determining a temperature  
2 distribution profile comprises experimentation.

1       36. The method of Claim 34 wherein the modular cooling element is  
2 configured to provide localized cooling at the location.

1       37. The method of Claim 34 wherein the step of interconnecting the  
2 modular cooling element with the cooling system comprises providing a piping  
3 system having at least one connection device.

1       38. The method of Claim 37 wherein the piping system further comprises  
2 at least one flow control device.

1       39. The method of Claim 34 wherein the modular cooling element is  
2 configured for interchangeable installation at one or more locations.

1           40. The method of Claim 34 wherein the modular cooling element is  
2 portable.

1           41. The method of Claim 34 wherein the refrigeration device is a  
2 temperature controlled case.

1           42. The method of Claim 41 wherein the temperature controlled case is a  
2 new construction temperature controlled case.

1           43. The method of Claim 34 wherein the step of determining a temperature  
2 distribution profile comprises monitoring a temperature of a plurality of  
3 predetermined products intended for storage and display within the refrigeration  
4 device.